Green River

Regional Educational Cooperative

GRADE 4

MATHEMATICS

MULTIPLE CHOICE

AND

CONSTRUCTED RESPONSE

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Multiple Choice Items

Multiple Choice Item 1

Standard: MA-04-1.3.01: Number Operations — Students will analyze real-world problems to identify appropriate representations using mathematical operations, and will apply operations to solve real-world problems with the following constraints: add and subtract whole numbers with four digits or less, multiply whole numbers with two digits or less, divide whole numbers with three digits or less by single-digit divisors (with or without remainders), add and subtract fractions with like denominators less than or equal to 10, and add and subtract decimals through hundredths.

Bloom's Taxonomy
Knowledge
Comprehension
Application
Analysis
Synthesis
Evaluation

Depth of Knowledge
Level 1
Level 2
Level 3
Level 4

Answer Key: B

Portion of Standard Being Addressed
This item requires the student to explain how division is inversely related to multiplication.

1. How could Haley check this division problem?

$$8\overline{)\,2634}\ \ \ \frac{329\ R2}{}$$

A. Multiply 2634 by 2; then add 8.
B. Multiply 8 by 329; then add 2.
C. Divide 8 by 329; then add 2.
D. Divide 329 by 2; then add 8.

Multiple Choice Item 2

Standard: MA-04-1.3.01: Number Operations — Students will analyze real-world problems to identify appropriate representations using mathematical operations, and will apply operations to solve real-world problems with the following constraints: add and subtract whole numbers with four digits or less, multiply whole numbers with two digits or less, divide whole numbers with three digits or less by single-digit divisors (with or without remainders), add and subtract fractions with like denominators less than or equal to 10, and add and subtract decimals through hundredths.

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Level 4

Answer Key: D

Portion of Standard Being Addressed
This item requires the student to apply operations to solve real-world problems.

2. Mr. Wilkins delivers newspapers to several houses on Maple Street. He delivers 27 papers every day, Monday through Friday, and 32 papers on Sunday. How many newspapers does Mr. Wilkins deliver to the homes on Maple Street in 4 weeks?

   A.   128 newspapers

   B.   236 newspapers

   C.   540 newspapers

   D.   668 newspapers

Multiple Choice Item 3

Standard: MA-04-1.3.01: Number Operations — Students will analyze real-world problems to identify appropriate representations using mathematical operations, and will apply operations to solve real-world problems with the following constraints: add and subtract whole numbers with four digits or less, multiply whole numbers with two digits or less, divide whole numbers with three digits or less by single-digit divisors (with or without remainders), add and subtract fractions with like denominators less than or equal to 10, and add and subtract decimals through hundredths.

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Level 2
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Answer Key: C

Portion of Standard Being Addressed
This item requires the student to apply operations to solve real-world problems.

3. A sports arena has 24 sections. Each section has 6 rows. Each row has 12 seats in each row. How many seats are in each section of the arena?

   A. 36 seats

   B. 42 seats

   C. 72 seats

   D. 144 seats

Multiple Choice Item 4

Standard: MA-04-4.1.01: Data Representations — Students will analyze and make inferences from data displays (drawings, tables/charts, tally tables, pictographs, bar graphs, circle graphs, line plots, Venn diagrams).

Bloom's Taxonomy
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Level 4

Answer Key: B

Portion of Standard Being Addressed
This item requires the student to analyze data from line graphs.

4. Sally participated in a walking race. The graph shows her results. Which of the following **best** explains the graph?

Sally's Race
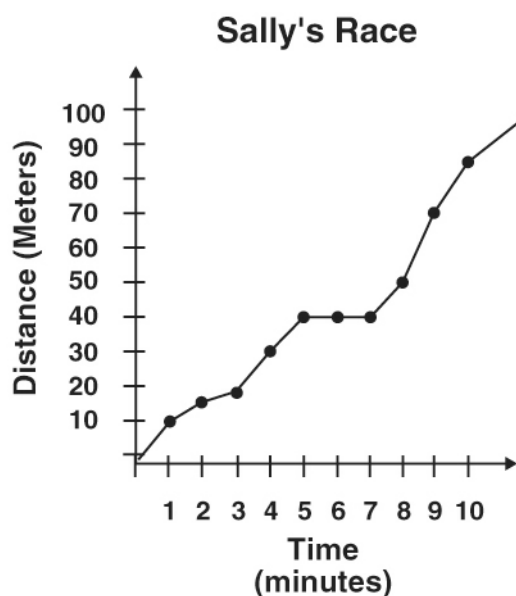
A. Sally started the race going very fast and then slowed down for a while. Then she finished the run, alternating walking and running.

B. Sally started slowly, gained some speed, and then rested for a while before finishing the race at a quick pace.

C. Sally ran most of the race at a steady pace, but she slowed down at the end.

D. Sally walked at first, then she ran for a while, and then she walked to the finish line.

Multiple Choice Item 5

Standard: MA-04-5.1.01: Patterns, Relations, and Functions — Students will extend patterns (e.g., 108, 208, 308, 408, . . .) from real-world and mathematical problems; compare simple patterns (e.g., numbers, pictures, words) and describe rules for simple number patterns (e.g., 1, 3, 5, 7, . . . ; 5, 10, 15, 20, . . .; 30, 27, 24, 21, . . .).

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Answer Key: D

Portion of Standard Being Addressed
This item requires the student to describe a rule for a number pattern.

5. Use the pattern below to answer the question.

    1, 6, 2, 12, 4, 24, 8, 48, 16, . . .

What is the rule for the pattern?

A. add 5, subtract 4

B. multiply by 2, subtract 4

C. add 6, divide by 3

D. multiply by 6, divide by 3

Constructed Response Items

Constructed Response Item 6 Lewis and Clark Show

Standard: MA-04-1.3.01: Number Operations — Students will analyze real-world problems to identify appropriate representations using mathematical operations, and will apply operations to solve real-world problems with the following constraints: add and subtract whole numbers with four digits or less, multiply whole numbers with two digits or less, divide whole numbers with three digits or less by single-digit divisors (with or without remainders), add and subtract fractions with like denominators less than or equal to 10, and add and subtract decimals through hundredths.

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6. The Lewis and Clark show is open every day from 10:00 A.M. to 5:00 P.M. The owners expect 50 people to visit the show during every hour that it is open.

a. How many people do the owners expect to visit the show in a day? Show or explain how you found your answer.

Tickets for the show cost $2 per person.

b. How much money do the owners expect to make each day from ticket sales? Show or explain how you found your answer.

The owners of the show would like to increase the money made by each day's ticket sales to $1000.

c. How many **more** people would need to visit the show each day to reach this goal? Show or explain how you found your answer.

Lewis and Clark Show

Scoring Guide

Score	Description
4	The student demonstrates excellent problem solving skills by correctly analyzing and solving real-world problems involving computation with whole numbers and time.
3	The student demonstrates good problem solving skills by analyzing and solving real-world problems involving computation with whole numbers and time, with only minor errors or omissions. The response indicates that the student could readily correct any errors and omissions if given written feedback.
2	The student demonstrates basic problem solving skills by correctly completing a significant portion of the required tasks. The response indicates that the student would require some instruction to successfully complete the task.
1	The student demonstrates minimal problem solving skills. The response indicates that the student would require significant instruction to complete the task.
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response.

Sample Response:

Part a: There are 7 hours between 10am and 5pm. $7 \times 50 = 350$

Part b: $350 \times 2 = \$700$

OR

That would be $100 each hour. $100 \times 7 = \$700$

Part c: $1000 - 700 = \$300$ To make $300 more, they will need 150 more people because $300 \div 2 = 150$.

OR

$2 \times 500 = \$1000$ They need 500 people but only have 350 right now. That means they will need $500 - 350 = 150$ more people.

Sample Student Responses

Lewis and Clark Show

A. 10 ᴬᴹ — 5 ᴾᴹ open 7 hours a day

$$\begin{array}{r} 50 \\ \times\ 7 \\ \hline 350 \end{array}$$

Answer : <u>350</u> people a day

B. $\begin{array}{r} \times\ 350 \\ 2 \\ \hline 600 \\ 100 \\ \hline 700 \end{array}$

Answer : $700

C. $1000 - $700 = $300

$$\begin{array}{r} 100 \\ 2\overline{)300} \quad \ 50 \\ 200 \quad + \\ \hline 100 \quad 150 \\ 100 \\ \hline 0 \quad\quad 150 \end{array}$$

Answer : 150 more people

Score Point: 4

3. The Lewis and Clark show is open every day from 10:00 A.M. to 5:00 P.M.The owners expect 50 people to visit the show during every hour that it is open.

    a. How many people do the owners expect to visit the show in a day? Show or explain how you found your answer. 10,11,12,1,2,3,4,5 · 50×7=350 people

    Tickets for the show cost $2.00 per person.

    b. How much money do the owners expect to make each day from ticket sales? Show or explain how you found your answer. 350 people × two equals 700 dollars a day

    The owners of the show would like to increase the money made by each day's ticket sales to $1000.

    c. How many MORE people would need to visit the show each day to reach this goal? Show or explain how you found your answer. If you take 350 how do you convert that to $1,000? I doubled 350 and got 700 if you add 300 you get 1,000 so the answer would be 650.

Score Point: 3

A.

$$\begin{array}{r} 5\,0 \\ \times\ 7 \\ \hline \end{array}$$
(350)

b.
$$\begin{array}{r} 3\,5\,0 \\ \times\ 2 \\ \hline 6\,0\,0 \\ 1\,0\,0 \\ 0 \\ \hline \end{array}$$
(700.00)

$$\begin{array}{r} 2\,\overline{)7\,0\,0} \\ -\ 2\,0\,0 \\ \hline 5\,0\,0 \\ -\ 2\,0\,0 \\ \hline 3\,0\,0 \\ -\ 2\,0\,0 \\ \hline 1\,0\,0 \\ -\ 1\,0\,0 \\ \hline 0 \end{array}$$
100
100
100
50

c.
$$\begin{array}{r} 4\,5\,0 \\ \times\ 2 \\ \hline 8\,0\,0 \\ 1\,0\,0 \\ 0 \\ \hline 9\,0\,0 \end{array}$$

$$\begin{array}{r} 5\,5\,0 \\ \times\ 2 \\ \hline 1\,0\,0\,0 \\ 1\,0\,0 \\ 0 \\ \hline 1\,1\,0\,0 \end{array}$$

$$\begin{array}{r} 5\,0\,0 \\ \times\ 2 \\ \hline 1\,0\,0\,0 \end{array}$$

A. 350   b.$700.00   c. 200

Score Point: 2

a.
10:00 = 50
11:00 = 50
12:00 = + 50
1:00 = 50
2:00 = 50
3:00 = 50
4:00 = 50
5:00 = 50
———
900

4 hundred people

b.
$400
× 2
———
$800

c.
1000
− 800
———
200

2)200
100

100 more people need to visit each day

Score Point: 2

Constructed Response Item 7 End-of-year Party

Standard: MA-04-4.1.03: Data Representations — Students will construct data displays (pictographs, bar graphs, line plots, Venn diagrams, tables).

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7. The second, third, and fourth graders are voting on an act for their school party. The choices are a clown, a juggler, or a storyteller. These are the number of the votes for each act.

Second Grade

Act	Number of Votes
Clown	12
Juggler	6
Storyteller	9

Third Grade

Act	Number of Votes
Clown	9
Juggler	8
Storyteller	9

Fourth Grade

Act	Number of Votes
Clown	7
Juggler	7
Storyteller	13

a. Fill in the chart below with the total number of votes for the three grades for each act.

Total Number of Votes for all Three Grades

Act	Number of Votes
Clown	
Juggler	
Storyteller	

b. Make a **bar graph** on graph paper that shows the total number of votes for each act. Be sure to include all the necessary titles and labels.

End-of-year Party

Scoring Guide

| Score	Description
4	The student demonstrates a thorough understanding of collecting and displaying data by correctly combining data from three charts and creating a bar graph to accurately display the combined data.
3	The student demonstrates a general understanding of collecting and displaying data by combining data from three charts and creating a bar graph to display the combined data, with only minor errors or omissions. The response indicates that the student could readily correct any errors and omissions if given written feedback.
2	The student demonstrates a basic understanding of collecting and displaying data by correctly completing a significant portion of the required tasks. The response indicates that the student would require some instruction to successfully complete the tasks.
1	The student demonstrates a minimal understanding of collecting and displaying data. The response indicates that the student would require significant instruction to complete the tasks.
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response.

Sample Response:

Part a:

Total Number of Votes for all Three Grades

Act	Number of Votes
Clown	28
Juggler	21
Storyteller	31

Part b:

Total Number of Votes
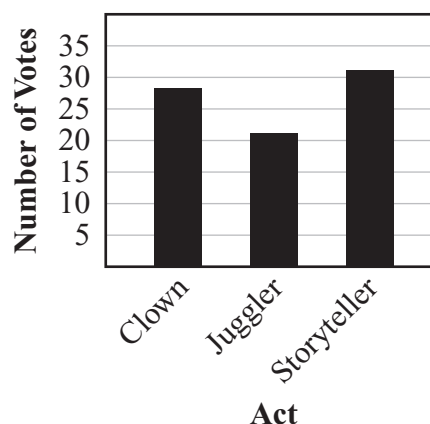
Sample Student Responses

End-of-year Party

a.

Total Number of Votes for All Three Grades

Act	Votes
Clown	28
Juggler	21
Storyteller	31

b.

Acts for the End of the Year
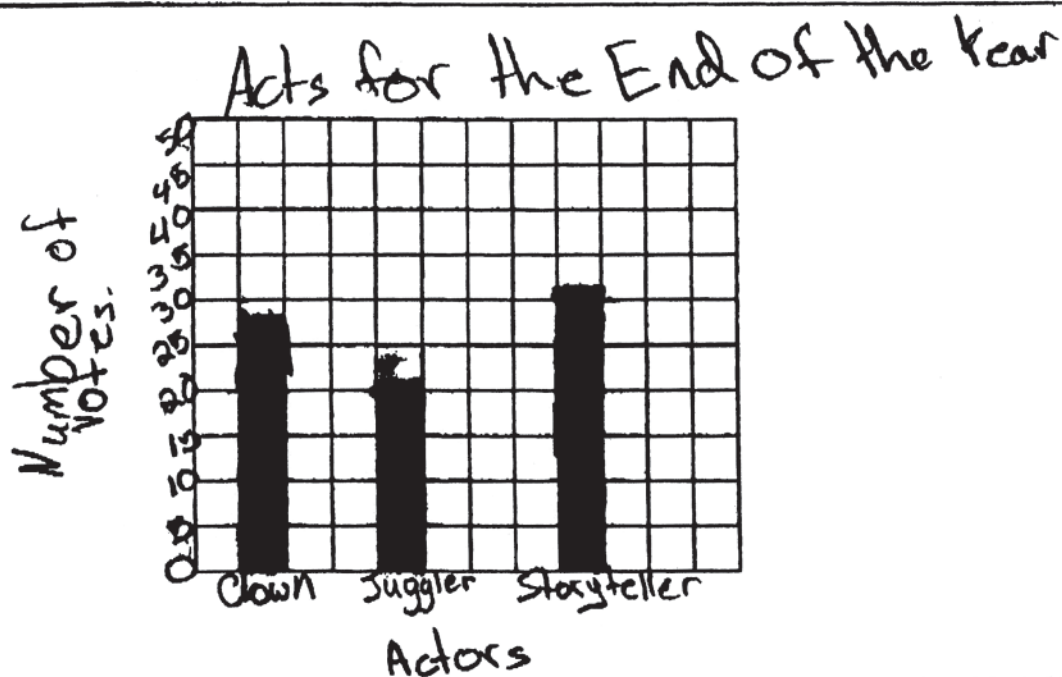
Score Point: 4

a.

Total Number of Votes for All Three Grades

Act	Votes
Clown	28
Juggler	21
Storyteller	31

b.

Total votes for ALL Three Grades

Numbers

31
29
27
25
23
21

Clown   Juggler   Story teller

Act,
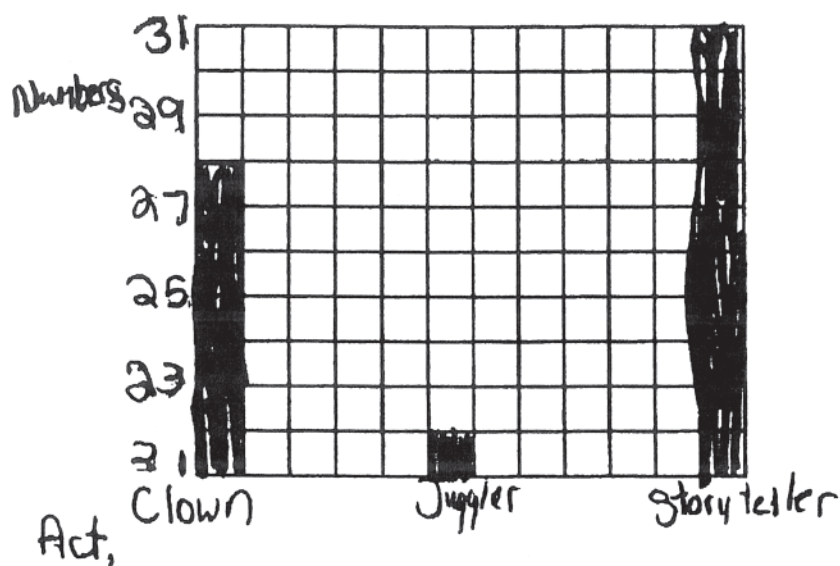
Score Point: 3

a.

Total Number of Votes for All Three Grades

Act	Votes
Clown	28
Juggler	21
Storyteller	31

b.

Number of Votes
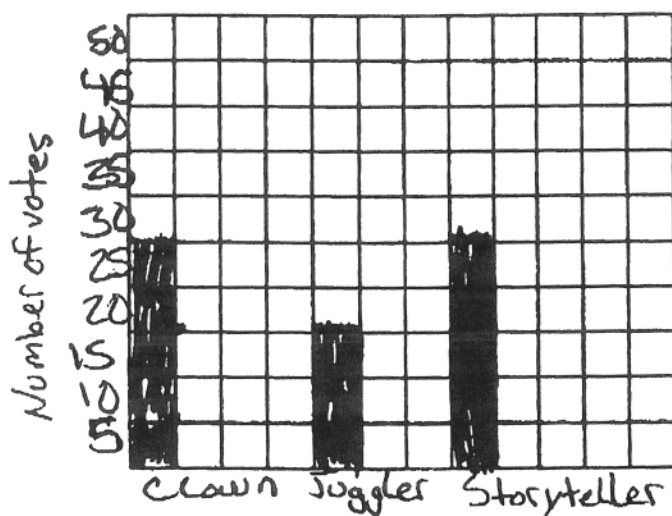
Score Point: 2

a.

Total Number of Votes for All Three Grades

Act	Votes
Clown	28
Juggler	21
Storyteller	31

b.

Score Point: 1